II. Existing Conditions

A. Watershed Description

The Wachusett Reservoir watershed is located in east-central Massachusetts and includes approximately 117 square miles (74,919 acres) of land and water resources. Boundaries of the Wachusett Reservoir watershed lie within 12 municipalities of Worcester County: the towns of Boylston, Clinton, Holden, Hubbardston, Paxton, Princeton, Rutland, Sterling, West Boylston, Westminster, and the cities of Leominster and Worcester. The Wachusett Reservoir watershed makes up the headwaters of the Nashua River watershed (**see Figure 2**). It is located in the southwest corner of the watershed, on the south branch of the Nashua River, five miles north of the City of Worcester.

Construction of the reservoir began in 1898, was completed in 1905, and filled with water in 1908. The reservoir was created by damming the south branch of the Nashua River, above Clinton, to flood the upper part of the Nashua River Valley. Water released from the dam is returned to the Nashua River and flows northward, where it converges with the north branch of the Nashua River and flows north to the Merrimack River in New Hampshire.

Wachusett Reservoir was one of the largest reservoirs in the world at the turn of the last century, with a surface area of 6.2 square miles and a mean depth of 49 feet. Wachusett Reservoir was the principal source of water supply to the Boston metropolitan area until 1946, when the Quabbin Reservoir was initially filled to capacity. The reservoir has a capacity of 65 billion gallons and within the watershed it is primarily fed by the network of rivers and streams that make up the Quinapoxet and Stillwater basins. The largest contributor, however, to the Wachusett Reservoir on an average annual basis is the water transferred from the Quabbin Reservoir. Under normal operating conditions, the MDC/DWM Watershed System (Quabbin Reservoir, Ware River and Wachusett Reservoir) provides approximately 260 million gallons per day (mgd) of source water (**see Table 1**).

The Wachusett Reservoir watershed system serves a primary role in the delivery of drinking water, as the reservoir provides final storage of source water to the MWRA before it is distributed eastward to 46 communities in metropolitan Boston. Water is taken from the Wachusett Reservoir at Cosgrove Intake and delivered eastward through the MWRA transmission and distribution system. In addition to the MWRA withdrawals, the Town of Clinton makes direct withdrawals from the reservoir, and Leominster and Worcester also have the capability to make reservoir withdrawals. The watershed communities of Boylston, West Boylston, Holden and Sterling draw from groundwater sources within the Wachusett Reservoir watershed. West Boylston and Boylston have town wells located on MDC property.

The diversity of natural and cultural features of the watershed creates unique qualities that are sought after for recreational opportunities by both local residents and tourists. The Wachusett Reservoir and surrounding MDC lands purchased for water supply protection have preserved some of the remaining noteworthy and distinctive landscapes in central Massachusetts and the Worcester plateau area. The topography of the watershed is generally rolling and hilly with steeper, mountainous terrain in the vicinity of Mount Wachusett. The Wachusett Reservoir is the lowest point of elevation at 395 feet above mean sea level and the highest elevation is at the summit of Mount Wachusett at 2,006 feet.

Table 1: Wachusett Reservoir Watershed Facts and Figures

Table 1A: Wachusett Reservoir Facts

Year Completed	1905
Dam Length	944 feet
Volume Capacity	65 billion gallons
Surface Area	6.5 square miles
Watershed Area	117 square miles
Shoreline	37 miles
Length	8.5 miles
Maximum Width	1.1 miles
Mean Width	0.7 miles
Maximum Depth	128 feet
Mean Depth	49 feet
Normal Operation Range	387-392 feet
Intake Depth	364 & 345 feet
Overflow Elevation	395 feet

Table 1B: Wachusett Reservoir Watershed Open Space Ownership

Open Space Owner	Acreage	Percent of Wachusett Watershed Land[1]
MDC		
Fee	16,386[2]	23%
Conservation Restriction	2,003	3%
Sub-Total MDC	18,389	26%
Other Protected Open Space		
DEM[3]	2,213	3%
Other EOEA Agencies	1,926	3%
Municipalities	5,375	7%
Other Government/Non-profit orgs.	2,289	3%
Sub-Total		
Permanent Other Protected Open Space	11,803	17%
Chapter 61[4]	7,042	10%
Total Other Protected Open Space	18,846	27%
Total Protected Open Space	**37,235**	**53%**

Data from MDC General Counsel and MDC/DWM GIS

[1] Excluding Reservoir Surface.

[2] MDC and MWRA make Payments in Lieu of Taxes (PILOT) on these lands to the towns in which they are located (see www.state.ma.us/mdc/pilot.htm).

[3] MDC has a Care and Control MOU with DEM on these lands.

[4] The Chapter 61 program reduces property taxes for qualified forestry, agricultural and recreation lands. These lands, however, are not permanently protected; property can be removed from the program if the owner reimburses a town for the tax reductions plus a penalty surcharge.

Figure 2: Wachusett Reservoir and Nashua River Watersheds
Go to www.mass.gov/dcr/waterSupply/watershed/documents/2003WachAccfig2.pdf

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B. Natural Resources

The MDC Division of Watershed Management published the Wachusett Reservoir Watershed Land Management Plan 2001-2010 in 2001. This plan details the Division's goals and objectives with regards to maintaining its properties to promote long term protection and maintenance of water quality. This document contains significant material on the hydrology, forestry, land use, wildlife and cultural resources of the watershed. The following sections are derived from that plan; more complete information on each of these topics can be found in both Wachusett Reservoir Watershed Land Management Plan 2001-2010 and the 1998 Wachusett Reservoir Watershed Protection Plan Update (available on-line at www.state.ma.us/mdc/dwmplans.htm).

1. Water

Inland waters within the Commonwealth of Massachusetts are classified under 314 CMR 4.03. These classifications are based on actual or intended use of the water resource. Class A waters are designated for use as a source of public (drinking) water supply. Class B waters are designated for the uses of protection and propagation of fish, other aquatic life and wildlife; and for primary and secondary contact recreation. Class C waters are designated for the uses and protection of fish, other aquatic life and wildlife; and for secondary contact recreation. The Massachusetts Department of Environmental Protection classifies all surface waters within the Wachusett Reservoir watershed as Class A waters.

2. Land Use

Vegetative cover in the watershed consists primarily of hardwood forest (deciduous trees such as maples, birches, ashes and oaks) and hardwood forest mixed with softwood forest (evergreen trees such as pines and hemlocks) with some scattered areas of cultivated land (corn, apples, hay) and wetlands. A large portion of the forested lands in the watershed are either owned by MDC or are otherwise protected (**see Figure 3**).

Half of the watershed is either owned by the MDC or is other protected conservation land (**see Table 1B**). Approximately 71% of the watershed is currently undeveloped forests and wetlands. The remaining 25% of the watershed includes 7% agriculture use, 8%residential use, 8% open water, less than 1% commercial office or industrial uses, and 7% other uses, such as transportation facilities and recreation (**see Figure 4**).

MDC/DWM owned lands contain forests, shoreline areas, fields, lawns, and buildings. The historic land management practices of the MDC/DWM have focused on forestry. New responsibilities have been introduced to the task of managing MDC lands from the activities of the Land Acquisition Program and other Division initiatives, such as wildlife habitat manipulation and public access controls. MDC/DWM's goal is to "establish and maintain the most effective and practical watershed cover in order to maximize the natural filtering capability of the lands surrounding the Wachusett Reservoir."

3. Wildlife Resources

The Wachusett Reservoir watershed supports an abundance of wildlife species. Wachusett Reservoir supports many water-based species (common loons, spotted sandpipers, bald eagles), and many streams, lakes and beaver ponds within the watershed host a variety of birds, amphibians, and reptiles. MDC forests provide habitat for a diversity of birds and mammals, including white-tailed deer, turkey, grouse, raccoons, and fisher. In addition, neotropical songbirds, including black and white warblers, black-throated green warblers, and scarlet tanagers utilize MDC forests for breeding and migratory rest stops. Although a majority of MDC-owned land in the Wachusett watershed is forested, several large tracts of early successional habitat do exist. These large open, grassy areas provide critical habitat for a variety of species dependent on open lands, including various insects, eastern meadowlarks, bobolinks, and a variety of sparrows.

The Wachusett Reservoir watershed is a mosaic of habitat types and conditions. MDC-owned land within the watershed is primarily forested, while privately owned lands are comprised of small farms, woodlots, and residential areas. This patchwork of habitats is both a benefit and detriment to wildlife species. A greater diversity of species may exist because of the diversity of habitats. However, the fragmented nature of the watershed makes it more difficult for animal species to travel and interact, and in some cases, the different habitat areas may be too small to support individual animals or populations.

Probably the most important feature of MDC-owned land in the Wachusett watershed is that it is protected from development. As the Boston metropolis expands westward, there remain fewer and fewer acres of open space. The protection MDC lands provide to wildlife species is critical to their long-term survival.

While a great deal of information exists about certain wildlife taxa (i.e., birds, mammals) through information collected from surveys and observations, little is known about other Wachusett wildlife such as insects, butterflies, dragonflies, and other less obvious species.

4. Cultural Resources

Humans have occupied the Wachusett Reservoir region for 12,000 years. Currently there are twenty-seven recorded prehistoric Native American sites within, or in close proximity to, the Wachusett Reservoir watershed. This quantity is known to be low as it represents only those recorded at the Massachusetts Historical Commission, and does not take into account the many more that are known to collectors but are not recorded. Combined, the recorded and unrecorded sites clearly attest to the viability of this region's habitat for human habitation for thousands of years, and establishes the archaeological sensitivity of the region.

Looking at more recent history, when the construction of the Wachusett Reservoir began in 1895, it was the largest project of its kind in the United States. Today, the many aqueducts, dams, dikes, reservoirs, shafts and pumping stations that were built to create Wachusett Reservoir and convey its water to the Sudbury Reservoir and then on to Boston are recognized as historically significant at both the local and national levels. Accordingly, in 1989, these engineering features, and many more, were listed on the National Register of Historic Places as the *Water Supply System of Metropolitan Boston Thematic Resource Area*. The listing includes

Figure 3: Open Space in Wachusett Reservoir Watershed
Go to www.mass.gov/dcr/waterSupply/watershed/documents/2003WachAccfig3.pdf

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the 91 individual buildings and structures that comprise the entire Metropolitan Water Supply System (excluding Quabbin, which was not yet 50 years old at the time of the listing). The Wachusett Reservoir watershed is represented in the National Register by the *Wachusett Aqueduct Linear District*, which contains fifteen buildings and structures, and the *Wachusett Dam Historic District*, which contains six individual buildings and structures.

There was differential treatment to existing buildings and structures during the construction of the Wachusett Reservoir. In some cases the superstructures were carefully disassembled and relocated to unthreatened locations. These actions often left well-defined and well-preserved cellar holes, mill raceways, barn foundations, etc. In other instances, buildings were knocked down and pushed in, and graded over, leaving no evidence except an occasional ornamental planting that seems curiously out of context. A good example of differential treatment is the case of the Old Stone Church. The Old Stone Church is the only structure of the old center of West Boylston remaining on its original site. The church overlooks a section of West Boylston that was inundated by the construction of the reservoir. Other nearby buildings and structures were razed or relocated. Today, the church stands alone, silently looking out over the waters of the Wachusett.

The buildings and structures in the Wachusett National Register Listing represent an ensemble of significant technical, engineering, and architectural features, buildings and structures. Additionally, the Old Stone Church and Stillwater Farm, while more parochial in nature, nevertheless embrace the historic character of a past long gone. The designation of these properties to the National Register (or Declared Eligible for it) automatically places them on the State Register, thereby affording them a degree of protection from ill-advised or uninformed development or alteration. Several statutes have been passed that provide the Massachusetts Historical Commission with jurisdiction to review proposed projects on State and National Register Properties. MGL ch. 9, §§ 26-27c and Ch. 254 of the Acts of 1988 establishes the authority of the MHC, outlines the review process, and clarifies who and what is covered under the law.

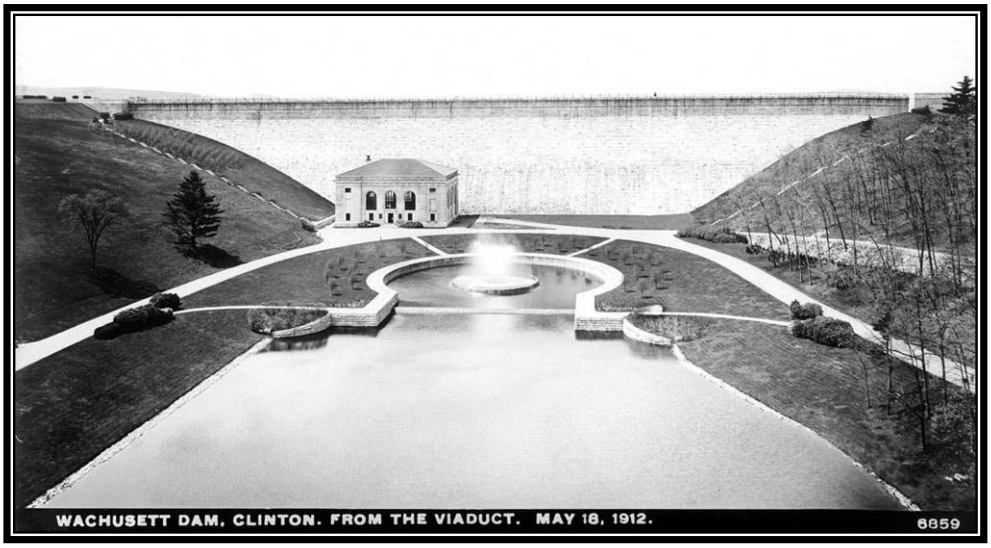

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Figure 4: Land Use in Wachusett Reservoir Watershed
Go to www.mass.gov/dcr/waterSupply/watershed/documents/2003WachAccfig4.pdf

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